



U.S. Army Engineer
Research and Development Center

Risk Assessment of Engineered Nanomaterials

Background ERDC is developing engineered nanomaterials for military applications including thermites, coatings, obscurants, and textiles. Because of their extremely small size (1-100 nm), nanomaterials have unique properties including large surface area, great strength, small mass, and a large capacity for manipulation of surface chemistry.

ERDC is leading the way in understanding the unique environmental attributes of these materials. The goal of ERDC research is to assist developers of nanotechnology while balancing environmental risks.

Expertise and Capabilities A research cluster of diverse ERDC experts are addressing questions regarding the source, analysis, fate and transport, and toxicology of engineered nanomaterials. Advanced state-of-the-art instrumentation is used to characterize surface area, particle size and distribution, particle charge, spectroscopy, and elemental composition.

Benefits The capabilities and research conducted at ERDC have provided tools to identify potential risk pathways and decision-analysis tools to prioritize research needs. Research conducted at ERDC will provide scientists and engineers using nanomaterials with the tools and knowledge to develop and acquire material that poses the minimum hazard to soldiers and the environment.

Significant Accomplishments

- Risk and decision analysis tools for prioritizing research needs for the military and technology developers.
- Collaborations with commercial and government technology developers to address priority materials.
- Studies characterizing the behavior of engineered nanomaterials in environmental systems.
- Recognized leadership and advising role to OSD-MERIT, U.S. Environmental Protection Agency, and North Atlantic Treaty Organization (NATO).

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